

Appn. No.: 10/510,084  
Amendment Dated January 31, 2008  
Reply to Office Action of January 2, 2008

RECEIVED  
CENTRAL FAX CENTER DTG1-122US (PF0156USPCT)  
JAN 31 2008

**Amendments to the Claims:** This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1. (Currently Amended) The use ofA method of improving the surface smoothness of a polymeric substrate, comprising disposing a coating layer on a surface of the polymeric substrate by a process comprising applying to a surface of the polymeric substrate a coating composition comprising:

(a) from about 5 to about 50 weight percent solids, the solids comprising from about 10 to about 70 weight percent silica and from about 90 to about 30 weight percent of a partially polymerized organic silanol of the general formula  $RSi(OH)_3$ , wherein R is selected from methyl and up to about 40% of a group selected from the group consisting of vinyl, phenyl, gamma-glycidoxypropyl, and gamma-methacryloxypropyl, and

(b) from about 95 to about 50 weight percent solvent, the solvent comprising from about 10 to about 90 weight percent water and from about 90 to about 10 weight percent lower aliphatic alcohol,

wherein the coating composition has a pH of from about 3.0 to about 8.0, ~~for the purpose of improving the surface smoothness of a polymeric substrate, and wherein the surface of said coating layer exhibits an Ra value of less than 0.6 nm, and/or an Rq value of less than 0.8 nm.~~

2. (Currently Amended) A useThe method according to claim 1 wherein the pH of the coating composition is in the range 3.0 to 6.5.
3. (Currently Amended) A useThe method according to claim 1 wherein the pH of the coating composition is about 6.0.
4. (Currently Amended) A useThe method according to claim 1 wherein said polymeric substrate is a polyester film.

Appln. No.: 10/510,084  
Amendment Dated January 31, 2008  
Reply to Office Action of January 2, 2008

DTG1-122US (PF0156USPCT)

5. (Currently Amended) The ~~use of~~method according to claim 4 wherein said polymeric substrate is a poly(ethylene naphthalate) or poly(ethylene terephthalate) film.
6. (Currently Amended) The ~~use~~method according to claim 4 wherein the polyester is derived from 2,6-naphthalenedicarboxylic acid.
7. (Currently Amended) ~~A use~~The method according to claim 6 wherein the polyester is poly(ethylene naphthalate) ~~having~~s an intrinsic viscosity of 0.5 – 1.5.
8. (Currently Amended) The ~~use~~method according to claim 1 wherein said polymeric substrate is a heat-stabilised, heat-set, oriented film.
9. (Currently Amended) The ~~use~~method according to claim 1 wherein said polymeric substrate has a shrinkage at 30 mins at 230°C of less than 1%.
10. (Currently Amended) The ~~use~~method according to claim 1 wherein said polymeric substrate has a residual dimensional change  $\Delta L_r$  measured at 25°C before and after heating the ~~film~~substrate from 8°C to 200°C and then cooling to 8°C, of less than 0.75% of the original dimension.
11. (Currently Amended) The ~~use~~method according to claim 1 wherein said polymeric substrate is a heat-stabilised, heat-set, oriented film comprising poly(ethylene naphthalate) film having a coefficient of linear thermal expansion (CLTE) within the temperature range from -40 °C to +100°C of less than  $40 \times 10^{-6}/^{\circ}\text{C}$ .
12. (Currently Amended) ~~A use~~The method according to claim 1 wherein said ~~heat-stabilised~~ ~~film~~substrate has a % of scattered visible light (haze) of <1.5%.
13. (Currently Amended) ~~A use~~The method according to claim 1 wherein said substrate is a heat-stabilised ~~film~~ is biaxially oriented film.
14. (Currently Amended) ~~A use~~The method according to claim 1 wherein the substrate is part of ~~in the manufacture of~~ an electronic or opto-electronic device containing a conjugated conductive polymer ~~and comprising~~ said substrate.

Appln. No.: 10/510,084  
Amendment Dated January 31, 2008  
Reply to Office Action of January 2, 2008

DTG1-122US (PF0156USPCT)

15. (Currently Amended) A-useThe method according to claim 14 wherein said electronic or opto-electronic device is an electroluminescent display device.
16. (Currently Amended) A-useThe method according to claim 14 wherein said electronic or opto-electronic device is an organic light emitting display (OLED) device.
17. (Currently Amended) A composite film comprising a heat-stabilised, heat-set, oriented polyester substrate and a coating layer, wherein the coating layer is derived from the coating composition recited in claim 1, and wherein at the surface of said coating substratelayer exhibits an Ra value of less than 0.6 nm, and/or an Rq value of less than 0.8 nm.
18. (Currently Amended) AThe composite film according to claim 17 wherein said polyester substrate is a poly(ethylene naphthalate) film.
19. (Currently Amended) AThe composite film according to claim 17 wherein said polyester substrate exhibits one or more of the following characteristics:
  - (i) a shrinkage at 30 mins at 230°C of less than 1%; and/or
  - (ii) a residual dimensional change  $\Delta L_r$  measured at 25Δ°C before and after heating the filmpolyester substrate from 8°C to 200°C and then cooling to 8°C, of less than 0.75% of the original dimension; and/or
  - (iii) a coefficient of linear thermal expansion (CLTE) within the temperature range from -40°C to +100°C of less than  $40 \times 10^{-6}/^{\circ}\text{C}$ ; and/or
  - (iv) a % of scattered visible light (haze) of <1.5%.
20. (Currently Amended) A composite film comprising a heat-stabilised, heat-set, oriented poly(ethylene naphthalate) substrate, and a coating layer; wherein said substrate exhibits one or more of:
  - (i) a shrinkage at 30 mins at 230°C of less than 1%; and/or

Appln. No.: 10/510,084  
Amendment Dated January 31, 2008  
Reply to Office Action of January 2, 2008

DTG1-122US (PF0156USPCT)

(ii) a residual dimensional change  $\Delta L_r$  measured at 25°C before and after heating the filmsubstrate from 8°C to 200°C and then cooling to 8°C, of less than 0.75% of the original dimension; and/or

(iii) a coefficient of linear thermal expansion (CLTE) within the temperature range from -40°C to +100°C of less than  $40 \times 10^{-6}/^{\circ}\text{C}$ ;

and wherein the surface of said coated substratelayer exhibits an Ra value of less than 0.6 nm, and/or an Rq value of less than 0.8 nm.

21. (Currently Amended) AThe composite film according to claim 17 further comprising a barrier layer.
22. (Currently Amended) AThe composite film according to claim 21 which exhibits a water vapour transmission rate of less than  $10^{-6}\text{g}/\text{m}^2/\text{day}$  and/or an oxygen transmission rate of less than  $10^{-5}/\text{mL}/\text{m}^2/\text{day}$ .
23. (Currently Amended) A method of manufacture of a coated polymeric film which comprises the steps of:
  - (i) forming a substrate layer comprising poly(ethylene naphthalate);
  - (ii) stretching the substrate layer in at least one direction;
  - (iii) heat-setting the substrate layer under dimensional restraint at a tension in the range of about 19 to about 75 kg/m of film width, at a temperature above the glass transition temperature of the polyester poly(ethylene naphthalate) but below the melting temperature thereof;
  - (iv) heat-stabilising the substrate layer under a tension of less than 5 kg/m of film width, and at a temperature above the glass transition temperature of the polyester poly(ethylene naphthalate) but below the melting temperature thereof; and
  - (v) disposing a coating layer on a surface of the substrate layer by a process comprising applying a planarising coating composition thereto such that at the surface of said

Appn. No.: 10/510,084  
Amendment Dated January 31, 2008  
Reply to Office Action of January 2, 2008

DTG1-122US (PF0156USPCT)

coatinged substratelayer exhibits an Ra value of less than 0.6 nm, and/or an Rq value of less than 0.8 nm.

24. (Currently Amended) A method of manufacture of an electronic or opto-electronic device containing a conjugated conductive polymer and a substrate, said method comprising the steps of:

- (i) forming a substrate layer comprising poly(ethylene naphthalate);
- (ii) stretching the substrate layer in at least one direction;
- (iii) heat-setting the substrate layer under dimensional restraint at a tension in the range of about 19 to about 75 kg/m of film width, at a temperature above the glass transition temperature of the polyesterpoly(ethylene naphthalate) but below the melting temperature thereof;
- (iv) heat-stabilising the substrate layer under a tension of less than 5 kg/m, and at a temperature above the glass transition temperature of the polyesterpoly(ethylene naphthalate) but below the melting temperature thereof;
- (v) disposing a coating layer on a surface of the substrate layer by a process comprising applying a planarising coating composition thereto such that at the surface of said coatinged substratelayer exhibits an Ra value of less than 0.6 nm, and/or an Rq value of less than 0.8 nm; and
- (vi) providing the coated, heat-stabilised, heat-set, orientedstretched filmsubstrate layer as a substrate in the device.

25. (Currently Amended) AThe method according to claim 25-24 further comprising providing on a surface of the coated substrate a barrier layer.

26. (Currently Amended) AThe method according to claim 25 wherein the composite film comprising said coated substrate and barrier layer exhibits a water vapour transmission rate of less than  $10^{-6}$ g/m<sup>2</sup>/day and/or an oxygen transmission rate of less than  $10^{-5}$ /mL/m<sup>2</sup>/day.

Appln. No.: 10/510,084  
Amendment Dated January 31, 2008  
Reply to Office Action of January 2, 2008

DTG1-122US (PF0156USPCT)

27. (Currently Amended) ~~A~~The composite film according to claim 20 further comprising a barrier layer.